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United States
Department of
Agriculture

Prepared by:
Cooperative State
Research Service
Science and
Education

Food and Agriculture Competitively Awarded Research Grants

Fiscal Year 1983

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PROCUREMENT SECTION
NATIONAL RESEARCH CENTER

FOOD AND AGRICULTURE
COMPETITIVELY AWARDED
RESEARCH GRANTS

Fiscal Year 1983

UNITED STATES
DEPARTMENT OF
AGRICULTURE

PREPARED BY:
OFFICE OF GRANTS
AND PROGRAM SYSTEMS
SCIENCE AND EDUCATION

NOVEMBER 1983

FOREWORD

Our country has an excellent State-Federal agricultural and forestry research partnership that has helped develop an agricultural research system that is envied the world over. The ability of our agriculture to produce efficiently and meet each new need is the result of the support of this strong, stable research system. It provides the continuing research base with the resources and continuity necessary for scientific advances on the many fronts involved in modern-day agriculture.

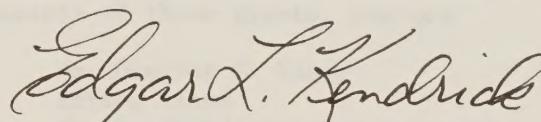
The research grants reported in this publication represent still another aspect of this research system--the Competitive, Special, and Alcohol Fuels research grants programs. The focus is primarily on basic research to discover the information needed before we can make further important and necessary breakthroughs in our applied research programs.

Qualified scientists both inside and outside the traditional agricultural research system apply for and receive these grants. Thus, not only scientists from the Federal laboratories, the State agricultural experiment stations, the schools of forestry, the 1890 universities and Tuskegee Institute, and the colleges of veterinary medicine, but qualified scientists from various other institutions participate in the programs.

The primary aim of the mission-oriented basic research programs is discovering new information needed to further significant progress in the plant sciences--photosynthesis, biological nitrogen fixation, genetic mechanisms, and biological stress--and human nutrition. Other areas supported by grant programs include animal health, aquaculture, antidesertification, soybean, and alcohol fuels research.

During the fiscal year October 1, 1982, to September 30, 1983, grants totaling \$25,913,997 were awarded to fund research projects at 90 institutions.

It is our belief that out of this combination of a sound, stable ongoing research system, with a viable extramural research grants program to attack significant and difficult problems in agricultural science, comes the information and knowledge necessary to keep our U.S. agriculture strong and resilient--ready and able to meet any challenge that might be ahead.



EDGAR L. KENDRICK
Director
Office of Grants and Program Systems

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This publication was prepared by the Grants Administrative Management Staff, Office of Grants and Program Systems, Science and Education, USDA.

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**FOOD AND AGRICULTURE
COMPETITIVELY AWARDED
RESEARCH GRANTS**

Fiscal Year 1983

THE GRANTS PROGRAMS

The research grants programs of Science and Education that used the competitive process in the selection of grants during Fiscal Year 1983 were:

1. Competitive Research Grants Program to support basic research in the food and agricultural sciences;
2. Special Research Grants Program to support research deemed by the Congress and the Department of Agriculture to be of particular importance to the Nation; and
3. Alcohol Fuels Research Grants Program.

These sources of funding supplement and complement funding of Federal agricultural research and the basic State research institution formula funding by Congress to help maintain a viable, effective ongoing State-Federal agricultural research capability for this country.

The grant funds are administered through the Office of Grants and Program Systems, Science and Education.

Guidelines for grants to be awarded competitively are published annually in the Federal Register, usually near the end of each calendar year. The guidelines identify selected research areas, the amount of funding, and the requirements for the submission of proposals.

Single copies or annual or semiannual subscriptions of the Federal Register are available for a small charge from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

If you want further information on program aspects of these grants, contact:

Dr. Edgar L. Kendrick
Director
Office of Grants and Program Systems
U. S. Department of Agriculture
Washington, D.C. 20250

If you want information on administrative aspects of these grants, contact:

Mr. Douglas E. Tabor
Acting Chief
Grants Administrative Management Staff
Office of Grants and Program Systems
U. S. Department of Agriculture
15th & Independence Avenue, SW
Washington, D.C. 20251

COMPETITIVE RESEARCH GRANTS PROGRAM

The grants awarded in this program concentrate in the plant biology and human nutrition areas. These two areas were selected because many scientific groups consider them to offer exceptional opportunity for fundamental scientific discovery. Research in these areas, in the long run, should contribute to applied research and development vitally needed for solving important food and nutrition problems. There is a need for innovative approaches and enhanced levels of funding to find ways to increase food production and improve human nutrition.

The following tabulation lists the funds awarded in the various areas in FY 1983 under the Competitive Research Grants Program.

Plant biology	\$14,520,900
Biological nitrogen fixation	\$3,212,792
Photosynthesis	\$3,207,792
Genetic mechanisms for crop improvement	\$4,018,270
Biological stress on plants	\$4,082,046
Human requirements for nutrients	\$ 1,936,120
TOTAL	\$16,457,020

This program is administered under the authority of Section 2(b) of P.L. 89-106, 7 U.S.C. 450i(b), as amended by Section 1414(b) of P.L. 95-113 and Section 1415(a) of P.L. 97-98, and in accordance with Sections 6301-6308 of P.L. 97-258.

U.S. colleges and universities, other research institutions and organizations, Federal agencies, private organizations or corporations, and individuals may submit proposals.

Plant Biology

Grants were awarded in four areas of research in plant biology: Biological nitrogen fixation, photosynthesis, genetic mechanisms for crop improvement, and biological stress on plants. A brief description of each area of research follows with a listing of research grants made during FY 1983.

Biological Nitrogen Fixation

Grants in this area support research to find ways to naturally increase the nitrogen available to plants. Lack of nitrogen for plant growth is the most common limiting factor in crop agriculture. This research will contribute to understanding nitrogen-fixing mechanisms in both symbiotic and free-living organisms, as well as the fate of fixed nitrogen.

The objective of this research is to build a foundation of basic information concerning nitrogen fixation. This information should help us enhance the process in currently known systems and provide a base for developing new nitrogen fixing associations--by genetic transfer or other means--for crop species not now possessing such capability.

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD FROM	TO
Univ. of Arizona Tucson, Arizona 85721	⁹⁵ Mo NMR as a Probe of Molybdenum Centers	John H. Enemark	\$60,000	09/01/81	08/31/84
Univ. of California Berkeley, California 94720	Iron Assimilation in Nitrogen Fixing Bacteria	John B. Neilands	\$74,292	09/01/83	08/31/85
Univ. of California Davis, California 95616	Host Legume Effects on Hydrogen Evolution by <u>Rhizobium</u>	Donald A. Phillips	\$80,000	09/01/83	08/31/85
Univ. of California Davis, California 95616	Nitrogen Metabolism and Heterocyst Differentiation in Symbiotic Cyanobacteria	John C. Meeks	\$102,000	08/01/83	07/31/85
Univ. of California Davis, California 95616	Physiological Genetics of Denitrification: A Route to Conserving Fixed Nitrogen	John L. Ingraham	\$56,000	07/01/81	06/30/84
Univ. of California Riverside, California 92521	Localization and Synthesis of Two Soybean Nodule Enzymes Involved in Ureide Production	Eric W. Triplett	\$80,000	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Connecticut Storrs, Connecticut 06268	Physiology of Nitrogen Fixation in Actinorhizal Root Nodules	David R. Benson	\$80,000	07/01/81	06/30/85
Univ. of Florida Gainesville, Florida 32611	Developmental Biology of Nitrogen Fixation in <u>Casuarina</u> Root Nodules	Henry C. Aldrich	\$80,000	09/15/83	09/30/85
Southern Illinois Univ. Carbondale, Illinois 62901	Nitrogen Metabolism and N ₂ Fixation in Photosynthetic Green Bacteria	Michael T. Madigan	\$80,000	09/01/83	08/31/85
NCR, ARS, S&E, USDA 2000 West Pioneer Parkway Peoria, Illinois 61615	Regulation of Plant- Bacterial Interactions During Legume Root Nodule Formation	Carroll P. Vance	\$45,000	08/01/83	07/31/84
Purdue Research Foundation West Lafayette, Indiana 47907	Three-dimensional Structure of Nitrogenase	Michael G. Rossmann	\$115,000	08/01/83	07/31/85
Kansas State Univ. Manhattan, Kansas 66506	Nucleotide Specificity, pH and Temperature Responses of Rhizobium Nitrogenase	Lawrence C. Davis	\$70,000	08/01/83	07/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Northeastern Univ. Boston, Massachusetts 02115	Motility and Chemotaxis in <u>Rhizobium meliloti</u>	Kostia Bergman	\$55,000	08/01/83	07/31/84
Harvard College Cambridge, Massachusetts 02138	Sporulation by <u>Frankia</u> Related to Nodulation and N_2 -Fixation in Actinorhizal Plants	John G. Torrey	\$90,000	08/01/83	07/31/85
Massachusetts Institute of Technology Cambridge, Massachusetts 02139	Biochemical and Genetic Approaches to the Characterization of <u>nif</u> Gene Products	W. H. Orme-Johnson	\$85,000	08/01/81	07/31/84
Michigan State Univ. East Lansing, Michigan 48824	Genetic Regulation of the <u>Rhizobium</u> /Legume Symbiosis	Barry K. Chelm	\$76,000	08/01/83	07/31/85
Michigan State Univ. East Lansing, Michigan 48824	The Pathway of Microbial Denitrification	James M. Tiedje	\$105,000	09/01/83	08/31/85
Michigan State Univ. East Lansing, Michigan 48824	Lectin Receptors and Cytoskeletal Proteins in Soybean Cells	John L. Wang	\$85,000	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Minnesota St. Paul, Minnesota 55104	Magnetic Susceptibility Studies of Nitrogenase	Edmund P. Day	\$85,000	08/01/83	07/31/85
Univ. of Minnesota St. Paul, Minnesota 55104	Competitive Attributes of <u>Rhizobium japonicum</u> 123, a Successful Indigenous Strain	Edwin L. Schmidt	\$45,000	07/01/81	06/30/84
Univ. of Missouri Columbia, Missouri 65211	Ureide Synthesis and Utilization in Soybeans	Dale G. Blevins	\$130,000	07/15/81	07/31/85
Univ. of Missouri Kansas City, Missouri 64110	Transcription During Heterocyst Development in Cyanobacteria	R. L. Hirschberg	\$100,000	08/01/83	07/31/85
Washington Univ. St. Louis, Missouri 63130	Natural ¹⁵ N Enrichment of Nodules as Indicator of Assimilatory Path of Fixed Nitrogen	D. H. Kohl	\$110,000	08/01/81	07/31/85
Agric. Expt. Station Univ. of Nebraska Lincoln, Nebraska 68583	Soybean Nodule Senescence	Fred W. Wagner	\$85,000	08/01/83	07/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Research Foundation of State Univ. of New York Albany, New York 12201	Regulation of Corn Nitrate Reductase: Application of Monoclonal Antibodies	Wilbur H. Campbell	\$90,000	08/01/83	07/31/85
Boyce Thompson Inst. for Plant Research Cornell Univ., Tower Road Ithaca, New York 14853	Host Plant Genetics and Nodule Formation	Thomas A. LaRue	\$15,500	08/01/83	07/31/84
Boyce Thompson Inst. for Plant Res. Cornell Univ., Tower Road Ithaca, New York 14853	Reductant Source for Nitrogenase	Thomas A. LaRue	\$75,000	09/01/83	08/31/85
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Carbohydrate Metabolism in Legume Nodules	John G. Streeter	\$95,000	09/01/83	08/31/85
Charles F. Kettering Foundation Research Lab 150 E. South College Street Yellow Springs, Ohio 45387	Analysis of the Natural Population of <u>R. japonicum</u> as Competitors and Symbionts	T. V. Bhuvaneswari	\$76,000	08/01/83	07/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Charles F. Kettering Foundation Research Lab 150 E. South College Street Yellow Springs, Ohio 45387	Nitrogenase Reactivity: Relevance to Molecular Mechanisms and Cellular Physiology	Barbara K. Burgess	\$70,000	09/01/82	08/31/84
Charles F. Kettering Foundation Research Lab 150 E. South College Street Yellow Springs, Ohio 45387	The Azolla-Anabaena Symbioses: Form and Function	Gerald A. Peters	\$65,000	09/15/83	09/30/84
Charles F. Kettering Foundation Research Lab 150 E. South College St. Yellow Springs, Ohio 45387	Hemeprotein Oxidases P ₄₅₀ and Nitrogen Fixation in Nodules and Cultured Rhizobia	Donald L. Keister	\$25,000	07/01/81	08/31/84
Charles F. Kettering Foundation Research Lab 150 East South College Street Yellow Springs, Ohio 45387	Chemical Probes for the Molybdenum Site of Nitrogenase	John W. McDonald	\$92,000	09/01/81	08/31/85
Oklahoma State Univ. Stillwater, Oklahoma 74078	Chemical Characterization of the Barriers to Infection of Root Hairs by Rhizobia	Andrew J. Mort	\$75,000	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Oregon State Univ. Corvallis, Oregon 97331	Competition and Persistence Within Indigenous Rhizobial Populations	Peter J. Bottomley	\$100,000	08/01/81	07/31/85
Oregon State Univ. Corvallis, Oregon 97331	RNA Polymerase and Transcription in <u>Rhizobium</u> <u>meliloti</u>	Lyle R. Brown	\$90,000	09/01/83	08/31/85
Univ. of Texas Austin, Texas 78712-1095	The Recovery of Nitrogenase from Oxygen Inactivation	Fred R. Tabita	\$96,000	08/01/83	07/31/85
Univ. of Washington Seattle, Washington 98195	Nitrogen Fixation in Methylotrophic Bacteria	Mary E. Lidstrom	\$80,000	08/01/81	07/31/85
Univ. of Wisconsin Madison, Wisconsin 53706	HD Formation by Nitrogenase	Robert H. Burris	\$90,000	07/15/81	07/31/85
Univ. of Wisconsin Madison, Wisconsin 53706	Non-Genetic Regulation of Nitrogenase in Photosynthetic Bacteria	Paul W. Ludden	\$105,000	08/01/81	07/31/85
			TOTAL \$3,212,792		

Photosynthesis

Grants in this area focus on a better understanding of photosynthesis and associated carbon metabolism. Photosynthesis is the process whereby plants convert solar energy into chemical products that plants and animals use for growth and development.

The program's aim is to cover such areas as the mechanisms of energy capture and conversion, structure, synthesis, and turnover of the photosynthetic apparatus, CO₂ fixation, photo-respiration, and dark respiration. Other areas included in this program are projects on the relation of plant development to photosynthesis, including development of photosynthetic competence, translocation and partitioning of photosynthetic products; and design of whole leaf and whole plant structures best suited for photosynthetic productivity. Another area set forth for proposals is that of the design of new methods of genetic and cellular manipulation to improve photosynthetic efficiency in plants--including studies of the chloroplast genome, of nuclear genes regulating photosynthesis, and analysis of regulatory steps controlling both nuclear and cytoplasmic genome expression and their interactions.

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of California Berkeley, California 94720	Photosynthetic Enzyme Regulation in C ₄ Plants	Bob B. Buchanan	\$62,000	08/01/83	07/31/85
Univ. of California Berkeley, California 94720	Structural Differentia- tion and Functional Organization in Higher Plant Chloroplasts	Anastasios Melis	\$60,000	09/01/81	08/31/85
Univ. of California Berkeley, California 94720	Electron Spin Echo Spectroscopy in Photosynthesis	Kenneth Sauer	\$77,000	09/01/83	08/31/85
Univ. of California Davis, California 95616	Role of Chloroplast and Vacuole Proteinases in Chloroplast Senescence	Ray C. Huffaker	\$88,000	08/15/83	08/31/85
Univ. of Calif-San Diego La Jolla, California 92093	The Photochemical Apparatus of Photosynthesis	Warren L. Butler	\$50,000	08/01/83	07/31/84
Univ. of California Los Angeles, California 90024	The Molecular Basis of the Synthesis and Function of the Light- Harvesting Chlorophyll A/B Protein	Elaine M. Tobin	\$75,000	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of California Davis, California 95616	Photosynthesis in Relation to Stomatal Response to Humidity: Significance of Single-Leaf Data	Theodore C. Hsiao	\$85,000	09/01/83	08/31/85
Univ. of California Los Angeles, California 90024	Ribulose Bisphosphate Carboxylase: Structure and Function	David Eisenberg	\$75,000	09/01/83	08/31/85
Stanford Univ. Stanford, California 94305	The Guard Cell Chloroplast and the Control of Gas Exchange in Leaves	Eduardo Zeiger	\$14,000	09/15/83	09/30/84
Stanford Univ. Stanford, California 94305	NMR Studies of Quinone Binding Sites in Photosynthetic Reaction Centers	Steven G. Boxer	\$90,000	09/01/83	08/31/85
Yale Univ. New Haven, Connecticut 06520	Electron Flow in Photosystem II	Gary W. Brudvig	\$51,000	08/01/83	07/31/85
Univ. of Miami Coral Gables, Florida 33124	Structural Studies of Chlorophyll-Protein Complexes	Roger E. Fenna	\$100,000	09/01/81	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Georgia Research Foundation Athens, Georgia 30602	Hybridizations Between <u>Panicum</u> Species Differing in Photosynthetic Pathways	R. H. Brown	\$52,000	09/15/83	09/30/85
Univ. of Chicago Chicago, Illinois 60637	Excitation Transfer and Trapping in Higher Plant Photosynthesis	G. R. Fleming	\$55,000	09/01/83	08/31/85
Univ. of Health Science Chicago Medical School North Chicago, Illinois 60064	Light Regulated Enzymes of Photosynthetic Carbon Assimilation	Frank Marcus	\$70,000	09/01/83	08/31/85
Univ. of Illinois Urbana, Illinois 61820	Herbicide Action and Selectivity in Photosynthetic Electron Transport	Colin A. Wright	\$50,000	09/15/81	09/30/84
Purdue Research Foundation West Lafayette, Indiana 47907	Mechanisms of Electron Transport in Photosynthesis	John L. Markley	\$50,000	08/15/82	08/31/84
Kansas State Univ. Manhattan, Kansas 66506	Development of Lipid-Protein Complexes in <u>Anacystis</u> Membranes	James A. Guikema	\$44,000	09/15/83	09/30/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Harvard College Cambridge, Massachusetts 02138	Genes for Photosynthesis in Corn	Lawrence Bogorad	\$50,000	08/15/82	08/31/84
Univ. of Michigan Ann Arbor, Michigan 48109	Amino Acids at the Active Site of CF ₁ , a Spin-echo nmr Study	Wayne D. Frasch	\$88,000	09/01/83	08/31/85
Michigan State Univ. East Lansing, Michigan 48824	Directed Genetic Modification of RuBP Carboxylase/Oxygenase	C. R. Somerville	\$56,000	07/15/83	07/31/84
Michigan State Univ. East Lansing, Michigan 48824	Plastome-Genome Incompatibility and Recombination of Chloroplast DNAs	Barbara B. Sears	\$90,000	09/01/83	08/31/85
Michigan State Univ. East Lansing, Michigan 48824	Charge Separation and Stabilization in Chloroplast Photosystem II	Gerald T. Babcock	\$58,000	08/01/81	07/31/84
Univ. of Missouri Columbia, Missouri 65211	Role of Fructans in the Grass Leaf Meristem	Curtis J. Nelson	\$75,000	09/01/83	08/31/85

**COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS**

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Washington Univ. St. Louis, Missouri 63130	Ultrafast Spectroscopic Studies of Photosynthetic Electron Transfer	Dewey Holton	\$100,000	09/01/83	08/31/85
Agric. Expt. Station Univ. of Nebraska Lincoln, Nebraska 68583	The Role of Thylakoid Organization in Photosynthesis and Its Regulation	John P. Markwell	\$27,092	09/01/83	08/31/85
Univ. of Nebraska Lincoln, Nebraska 68588	Relationship Between Cellular and Chloroplast Differentiation in Sorghum	Steven Schwartzbach	\$85,000	07/15/83	07/31/85
Cornell Univ. Ithaca, New York 14853	The Role of Membrane Transport Systems in the Partitioning of Photosynthate	Roger M. Spanswick	\$50,000	09/01/81	08/31/84
Cornell Univ. Ithaca, New York 14853	Transcription and Translation by Chloroplasts	Andre T. Jagendorf	\$70,000	09/01/83	08/31/85
Cornell Univ. Ithaca, New York 14853	Transport of Glycolic Acid in Photorespiration	Richard E. McCarty	\$42,800	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Boyce Thompson Inst. for Plant Research Cornell Univ., Tower Rd. Ithaca, New York 14853	Analysis of Photosynthetic Activity in Whole Leaves by Delayed Light Emission	James L. Ellenson	\$45,000	09/01/83	08/31/85
The Rockefeller Univ. New York, New York 10021	Characterization of Plant Genes Encoding Photosynthetic Membrane Proteins	Anthony Cashmore	\$150,000	08/01/83	07/31/86
The Rockefeller Univ. New York, New York 10021	Regulation of PEP Carboxylase Gene Expression	Nam-Hai Chua	\$50,000	09/01/81	08/31/84
Rensselaer Polytechnic Institute Troy, New York 12181	Synthesis and Assembly of Chloroplast Protein	Harry Roy	\$34,000	08/01/81	08/31/84
Brookhaven National Laboratory U.S. Department of Energy Upton, New York 11973	Photosynthetic Mechanisms in Nitrogen-Fixing Heterocysts of Cyanobacteria	Geoffrey Hind	\$65,000	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Pennsylvania State Univ. Univ. Park, Pennsylvania 16802	Maize Kernel Amyloplast Isolation, Enzyme Compartmentation, and Characterization	J. C. Shannon	\$79,900	09/01/83	08/31/85
Pennsylvania State Univ. Univ. Park, Pennsylvania 16802	Structure-Function Studies on Cyanobacterial Phycobilisomes and Chlorophyll Proteins	Donald A. Bryant	\$62,000	09/01/83	08/31/85
Brown Univ. Providence, Rhode Island 02912	Biosynthesis of Chlorophyll b	Samuel I. Beale	\$40,000	07/15/81	07/31/85
Brown Univ. Providence, Rhode Island 02912	Mechanism of Energy Distribution in Biliprotein-containing Organisms	John Biggins	\$70,000	08/01/81	07/31/85
Univ. of South Carolina Columbia, South Carolina 29208	Metabolic Control in Peroxisomes and Mitochondria in Photorespiration	Anthony H.C. Huang	\$75,000	08/01/83	07/31/85
Univ. of Texas Austin, Texas 78712	Form I and Form II RuBisCO in Photosynthetic Bacteria	F. Robert Tabita	\$50,000	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Texas Tech Univ. Lubbock, Texas 79409	Protein: Protein Complexes in Photosynthetic Electron Transfer Reactions	David B. Knaff	\$80,000	09/01/83	08/31/85
Univ. of Utah Salt Lake City, Utah 84112	Control of Net Photosynthesis and Water Loss in Leaves	James Ehleringer	\$85,000	09/15/82	09/30/85
Washington State Univ. Pullman, Washington 99164-1030	Photorespiration: Mechanism and <u>in vivo</u> Variation	Gerald E. Edwards	\$78,000	09/15/83	09/30/85
Univ. of Wisconsin Madison, Wisconsin 53706	Mechanism of Action of Phosphoenolpyruvate Carboxylase	Marion H. O'Leary	\$90,000	09/01/83	08/31/85
Univ. of Wisconsin Madison, Wisconsin 53706	Role of the Envelope Membranes in Chloroplast Biogenesis	Kenneth Keegstra	\$165,000	09/01/83	08/31/86
Medical College of Wisconsin, Inc. Milwaukee, Wisconsin 53226	Mechanism of Activation of Ribulose Bisphosphate Carboxylase	Henry M. Mizorko	\$49,000	09/01/81	08/31/84

TOTAL \$3,207,792

Grants in this area are to encourage innovative or unique genetic approaches to the development of genetically superior varieties of agricultural crops. They are directed toward obtaining novel genetic combinations or gene modifications that cannot be achieved using conventional plant breeding techniques.

Research areas are: acquisitions of basic information on the plant nuclear and organellar genes; development of cellular and molecular methods for identifying plant genes or traits which are important targets for genetic manipulation; development of molecular and cellular methods for crop improvement using gene transfer or genetic engineering technology; cell and tissue culture studies designed to increase our knowledge of the basic processes involved in regenerating whole plants from single cells; development of new methods for producing, selecting, and transferring agronomically important traits; and basic genetic studies on the alteration and utilization of unadapted and wild germplasm.

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Northern Arizona Univ. Flagstaff, Arizona 86011	Barley Embryogenesis: Quantitative Ultra- structural Analysis of Male Gametes and Synergids Before Fertilization	H. Lloyd Mogensen	\$60,000	08/15/83	08/31/85
Univ. of California Davis, California 95616	Transfer of Quantitative Characters: Salt Tolerance from <u>Elytrigia</u> (<u>Agropyron</u>) to <u>Triticum</u>	Jan Dvorak	\$40,000	09/01/81	08/31/84
Univ. of Calif-San Diego La Jolla, California 92093	Use of Plant Viruses to Introduce DNA Into Plants	Stephen H. Howell	\$50,000	09/01/81	08/31/84
Univ. of California Los Angeles, California 90024	Ethylene and Wounding Directed Gene Expression in Plant Tissues	George G. Laties	\$110,000	09/15/83	09/30/85
Salk Institute for Biological Studies POB 85800 San Diego, California 92138	Molecular Characterization and Biotechnological Manipulation of Plant Plasmamembrane	Christopher J. Lamb	\$125,000	08/01/83	07/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Colorado Boulder, Colorado 80309	Characterization of Pathogen Genes That Interact with Plant Resistance Genes	Barbara Valent	\$110,000	09/01/83	08/31/85
Yale Univ. New Haven, Connecticut 06520	Embryonic and Post- Embryonic Regulation of RuBPCase	Ian M. Sussex	\$149,000	07/01/83	06/30/85
Carnegie Institution of Washington 1530 P. Street, N.W. Washington, D.C. 20005	Regulation of Gene Expression by Phytochrome	William F. Thompson	\$55,000	09/15/82	09/30/84
Univ. of Florida Gainesville, Florida 32611	Chromatin Structure and Gene Expression in Maize	Robert J. Ferl	\$125,000	08/01/83	07/31/85
Univ. of Florida Gainesville, Florida 32611	T-DNA Sequences Involved in Transcriptional Control	William B. Gurley	\$135,000	08/01/81	07/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Florida Gainesville, Florida 32611	Chromatin Structure and Gene Expression in Maize	Robert J. Ferl	\$75,000	08/01/83	07/31/86
Florida State Univ. Tallahassee, Florida 32306	Fusion and Culture of Plant Protoplasts for the Production of Stable Hybrids	George W. Bates	\$100,000	07/15/83	07/31/85
Florida State Univ. Tallahassee, Florida 32306	Development of a Genetic Manipulation System for Cotton	Margaret Y. Menzel	\$40,000	09/15/81	09/30/84
Univ. of Georgia Research Foundation Athens, Georgia 30602	Soybean RuBP Carboxylase Small Subunit Gene Family: Structure and Expression	Richard B. Meagher	\$120,000	09/15/83	09/31/85
NCR, ARS, S&E, USDA 2000 West Pioneer Parkway Peoria, Illinois 61615	The Endosperm: Genetics and Application to Intra- and Interspecific Hybridization	Robert E. Hanneman	\$115,000	07/01/83	06/30/86

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Purdue Research Foundation West Lafayette, Indiana 47907	Regulation of Glycinin Synthesis in Developing Soybeans	Niels C. Nielsen	\$110,000	07/15/83	07/31/85
Kansas State Univ. Manhattan, Kansas 66506	Tissue Culture as a Method of Alien Gene Transfer in Wheat (<u>Triticum aestivum</u> L.)	Rollin G. Sears	\$70,000	09/01/81	08/31/85
Univ. of Kentucky Research Foundation Lexington, Kentucky 40546	Wide Hybridization and Gene Transfer in <u>Nicotiana</u> and <u>Trifolium</u>	Glenn B. Collins	\$50,000	07/01/81	06/30/84
Univ. of Kentucky Research Foundation Lexington, Kentucky 40546-0091	Genetics of Breeding of Somaclonal Variation in Red Clovers	Norman L. Taylor	\$50,000	09/01/83	08/31/84
SR, ARS, S&E, USDA P.O. Box 53326 New Orleans, Louisiana 70153	Isozyme Loci as Markers for Locating and Manipulating Quantitative Trait Loci	Charles W. Stuber	\$50,000	09/15/83	09/30/84

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
NER, ARS, S&E, USDA BARC-West Beltsville, Maryland 20705	Molecular Analysis of Gene Expression During Carrot Somatic Embryogenesis	D. E. Cress	\$156,000	08/15/83	08/31/86
NER, ARS, S&E, USDA BARC-West Beltsville, Maryland 20705	Structural Analysis, Distribution, and Uses of a Soybean Insertion Sequence	Lila O. Vodkin	\$80,000	09/01/83	08/31/85
Univ. of Maryland College Park, Maryland 20742	Somatic Embryogenesis in Crop Plants	Todd J. Cooke	\$110,000	08/01/83	07/31/85
Harvard College Cambridge, Massachusetts 02138	How is Chloroplast Gene Expression Regulated?	Lawrence Bogorad	\$90,000	09/15/83	09/30/85
Massachusetts Institution of Technology Cambridge, Massachusetts 02139	Regulation of Gene Expression in Plants via Secondary Structure of Messenger RNA	Lee Gehrke	\$125,000	08/01/83	07/31/85
Wayne State Univ. Detroit, Michigan 48202	A Novel Vehicle for Introducing Genetic Information Into Plants	Albert Siegel	\$99,000	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
Washington Univ. St. Louis, Missouri 63130	Characterization of the Barley Alpha-amylase Genes and Their Regulatory Elements	John C. Rogers	\$106,570	08/01/83 07/31/85
Research Foundation of State Univ. of New York P.O. Box 9 Albany, New York 12201	The Role of Heat Shock and Other Proteins in Tolerance to Heat Stress in Plants	Joseph Mascarenhas	\$80,000	08/01/83 07/31/85
North Carolina State Univ. Raleigh, North Carolina 27650	Mechanisms of Membrane Fusion in Fusogenic Carrot Protoplasts	Wendy F. Boss	\$125,000	07/15/83 07/31/85
North Carolina State Univ. Raleigh, North Carolina 27650	Biosystematics and Utilization of <u>Arachis</u> Species to Improve Cultivated Peanuts	Harold T. Stalker	\$25,000	09/01/83 08/31/84
Oregon State Univ. Corvallis, Oregon 97331	Control of Cytokinin Synthesis in Relation to Wheat Grain Development	Roy O. Morris	\$100,000	08/01/83 07/31/85
Univ. of Oregon Eugene, Oregon 97403	Nuclear-Cytoplasmic Inheritance Among the Solanaceae	Howard T. Bonnett	\$73,700	08/01/83 07/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Pennsylvania Philadelphia, Pennsylvania 19104	The Nature of Homeotic Mutations in Maize	R. Scott Poethig	\$110,000	09/01/83	08/31/85
Pennsylvania State Univ. Univ. Park, Pennsylvania 16802	The Glutathione S-Transferase Genes From Corn and Cotton	Chen-Pei David Tu	\$115,000	09/01/83	08/31/86
Pennsylvania State Univ. Univ. Park, Pennsylvania 16802	The Glutathione S-Transferase Genes From Corn	Chen-Pei David Tu	\$50,000	09/01/83	08/31/86
Univ. of Rhode Island Kingston, Rhode Island 02881	Studies on Virus-Induced Mutations in Maize	John P. Mottinger	\$90,000	08/01/83	07/31/85
Texas A&M Research Foundation College Station, Texas 77843	Regulation of Tuber Protein Synthesis in Potato	William D. Park	\$80,000	09/15/83	09/30/84
Texas A&M Research Foundation College Station, Texas 77843	Genetic Structure of Weed-Crop Population Systems (<u>Cucurbita</u> and <u>Chenopodium</u>)	Hugh D. Wilson	\$50,000	09/15/83	09/30/84

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
Texas A&M Research Foundation College Station, Texas 77843	Gene Synteny Relationships and Map Locations in Hexaploid Wheat and its Relatives	Gary E. Hart	\$100,000	09/01/83 08/31/86
Utah State Univ. Logan, Utah 84322	Transferring Apomixis to Wheat via Wide-Hybridization: The Necessary First Steps	John G. Carman	\$80,000	08/01/83 07/31/85
Washington State Univ. Pullman, Washington 99164-1030	Characterization of <u>Nicotiana-pTiAG63</u> Related DNA Sequences	Michael Thomashow	\$84,000	08/01/83 07/31/84
Univ. of Wisconsin Madison, Wisconsin 53706	Genetic Analysis of Alfalfa Variants Regenerated From Cell Cultures	E. T. Bingham	\$40,000	07/01/81 06/30/84
Univ. of Wisconsin Madison, Wisconsin 53706	The Phytochrome Gene: Structure, Organization and Expression	Peter H. Quail	\$90,000	09/01/81 08/31/85
Univ. of Wisconsin Madison, Wisconsin 53706	Systems of Polygenic Control of a Metric Trait, Phaseolin Seed Protein	Fredrick A. Bliss	\$45,000	09/15/81 09/30/84

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Wisconsin Madison, Wisconsin 53706	DNA Transformation Systems and Cloning Vehicles for <u>Phytophthora</u>	Sally Ann Leong	\$100,000	09/15/83	09/30/85
Univ. of Wisconsin Madison, Wisconsin 53706	Usefulness of 2n Gametes and Diploid Progenitor Species in Breeding Autotetraploid Orchardgrass	Michael D. Casler	\$75,000	09/15/83	09/30/85
			TOTAL \$4,018,270		

Biological Stress on Plants

Research grants in this area support studies on stresses on plants arising from their interactions with other plants or with other biological agents such as weeds, insects, nematodes, fungi, bacteria, viruses, and mycoplasma-like organisms. The ultimate goal is to reduce losses in plant productivity from damage caused by biologically generated stresses.

Emphasis in this area is on studies that will enhance understanding of how stressful interactions are established between plants and other biological agents; how such interactions are influenced by environmental and other factors inherent to the interacting organisms; how the interactions reduce plant productivity and usefulness to man; how plants react to stress generated by such interactions; and how damage from such interactions may be reduced or eliminated.

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Arizona Tucson, Arizona 85721	Identification of Root-knot Nematodes by Monoclonal Hybridoma Antibodies	David O. Lucas	\$70,000	07/01/83	06/30/85
Univ. of Arkansas Fayetteville, Arkansas 72701	Baculovirus Transmission in <u>Anticarsia gemmatalis</u> Populations on Soybean	Seth Y. Young	\$70,000	09/15/83	09/30/85
Univ. of Arkansas Fayetteville, Arkansas 72701	Beetle Regurgitant as a Determinant of Specificity of Plant Virus Transmission	Howard A. Scott	\$60,000	07/01/83	06/30/85
Univ. of California Berkeley, California 94720	AcMNPV Structural Proteins	Loy E. Volkman	\$70,000	06/15/83	06/30/85
Univ. of California Berkeley, California 94720	Enhancing Reproductive Isolation of a Genetically-improved Control Agent	Marjorie A. Hoy	\$60,000	09/01/83	08/31/85
Univ. of California Davis, California 95616	Coevolution in the Barley Composite Cross- <u>Rhynchosporium</u> Host-pathogen System	Robert W. Allard	\$75,000	07/01/83	06/30/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of California Davis, California 95616	Defining and Mapping the Genes of the Cauliflower Mosaic Virus	Robert J. Shepherd	\$42,000	08/01/81	07/31/84
Univ. of California Davis, California 95616	Mechanisms Controlling Expression of Virulence in <u>Pseudomonas savastanoi</u>	Tsune Kosuge	\$43,000	07/01/81	06/30/84
Univ. of California Riverside, California 92521	Viral Specific dsRNA: Diagnostic Potential and Functional Role in RNA Virus Pathology	James A. Dodds	\$60,000	07/01/83	06/30/85
Colorado State Univ. Ft. Collins, Colorado 80523	Optimal Exploitation of Antagonism in Biological Control	Ralph Baker	\$60,000	07/01/83	06/30/85
Colorado State Univ. Ft. Collins, Colorado 80523	Long-distance Dispersal and Water Contamination by <u>Erwinia carotovora</u>	Monty D. Harrison	\$40,000	07/01/83	06/30/84
Yale Univ. New Haven, Connecticut 06520	Genetics of Gypsy Moth Populations	Richard Harrison	\$75,000	07/01/83	06/30/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
NCR, ARS, S&E, USDA 2000 West Pioneer Parkway Peoria, Illinois 61615	The Role of the Host Plant in Directing Toxin Production	Richard D. Durbin	\$70,000	09/15/83	09/30/85
Univ. of Illinois Urbana, Illinois 61801	Corn Earworm: Self-selection of Nutrient Balance on Natural and Defined Diets	G. P. Waldbauer	\$80,000	06/01/83	05/31/85
Univ. of Illinois Urbana, Illinois 61801	Insecticidal and Synergistic Properties of Secondary Compounds in <u>Pastinaca sativa</u>	May R. Berenbaum	\$38,900	07/01/83	06/30/85
Univ. of Illinois Urbana, Illinois 61801	Kairomones in Corn and Cucurbits in Monitoring and Controlling Corn Rootworms	Robert L. Metcalf	\$30,000	09/15/81	09/30/84
Purdue Research Foundation West Lafayette, Indiana 47907	Structure of Barley Stripe Mosaic Virus RNAs and Their Interaction During Infection	Andrew O. Jackson	\$80,000	09/15/83	09/30/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Purdue Research Foundation West Lafayette, Indiana 47907	Changes in Phytoalexin Biosynthetic Enzyme mRNAs in Disease-Resistant Soybeans	David N. Kuhn	\$90,000	07/01/83	06/30/85
Iowa State Univ. of Science & Tech. Ames, Iowa 50011	Plant and Stand Response to Early Season Insect-Induced Stress in a Model System	Larry P. Pedigo	\$56,900	06/01/83	05/31/85
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Relation Between Phytoalexin Detoxification and Fungal Pathogenicity	David A. Smith	\$90,000	09/15/83	09/30/85
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Quantification of Plant Stress on Soybeans by Spider Mites	Juan G. Rodriguez	\$70,000	08/01/83	07/31/85
Univ. of Kentucky Lexington, Kentucky 40506	Pest Behavior on <u>Lycopersicon</u> Leaves: Role of Trichomes and Certain Leaf Oils	John C. Snyder	\$75,000	09/01/81	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Nature and Mode of Action of the Potyvirus Helper Component	T. P. Pirone	\$50,000	05/15/83	05/31/84
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506-0057	Viral Gene Expression in Potyvirus Infections	John G. Shaw	\$80,000	07/01/83	06/30/85
NER, ARS, S&E, USDA BARC-West Beltsville, Maryland 20705	Mechanisms of Plant Viroid Replication and Viroid-Host Interaction	R. A. Owens	\$81,500	09/15/81	09/30/85
NER, ARS, S&E, USDA BARC-West Beltsville, Maryland 20705	Cucumovirus Satellite-like RNA: Structure - Biological Function	Jacobus M. Kaper	\$45,000	09/15/82	09/30/84
Univ. of Massachusetts Amherst, Massachusetts 01003	Host Selection Determinants in Apple Maggot and Mediterranean Fruit Flies	Ronald J. Prokopy	\$50,000	09/01/82	08/31/84

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Michigan State Univ. East Lansing, Michigan 48824	Quantifying Sensory Determinants Mediating Oviposition by the Onion Fly	James R. Miller	\$50,000	06/01/83	05/31/84
Washington Univ. St. Louis, Missouri 63130	The Role of Hydroxyproline- rich Glycoproteins in the Plant's Response to Stress	J. E. Varner	\$60,000	07/01/83	06/30/86
Washington Univ. St. Louis, Missouri 63130	The Role of Hydroxyproline- rich Glycoproteins in the Plant's Response to Stress	J. E. Varner	\$20,000	07/01/83	06/30/86
Agric. Expt. Station Univ. of Nebraska Lincoln, Nebraska 68583-0704	Corynebacterium Pathogens of Corn and Wheat: Serology and Genetics	Anne K. Vidaver	\$70,000	09/01/83	08/31/85
Agric. Expt. Station Univ. of Nebraska Lincoln, Nebraska 68583-0704	Dynamic Simulation of Soybean-Weed Competition and Effects on Crop Performance	George E. Meyer	\$70,000	09/15/83	09/30/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Nebraska Lincoln, Nebraska 68588-0430	Analysis of the Plasma Membrane of Higher Plants	David W. Galbraith	\$70,000	09/01/83	08/31/85
Univ. of Nevada Reno, Nevada 89506	Biosynthesis of Insect Hydrocarbons - Potential for Insect Control	Gary J. Blomquist	\$80,000	07/01/83	06/30/85
Boyce Thompson Inst. for Plant Research Cornell Univ., Tower Road Ithaca, New York 14853	Role of Cyclic AMP in Uredospore Differentiation	Richard C. Staples	\$75,000	09/15/83	09/30/85
Cornell Univ. Ithaca, New York 14853	Development of an Apple Maggot Monitoring System Using Synthetic Apple Volatiles	W. Harvey Reissig	\$75,000	09/01/83	08/31/85
Boyce Thompson Inst. for Plant Research Cornell Univ., Tower Road Ithaca, New York 14853	Infection Mechanisms and <u>in vitro</u> Cultivation of Viral Pesticides	Robert R. Granados	\$90,000	08/01/83	07/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Cornell Univ. Ithaca, New York 14853	Mechanisms of Trichome-Mediated Insect Resistance in a Wild Tomato	Peter Gregory	\$70,000	07/01/83	06/30/85
Cornell Univ. Ithaca, New York 14853	Enzymology of Isoflavonoid Phytoalexin Biosynthesis	Hans D. VanEtten	\$70,000	07/01/83	06/30/85
Cornell Univ. Ithaca, New York 14853	Interactions of Plant Viruses with Their Hosts	Milton Zaitlin	\$80,000	09/01/81	08/31/85
Cornell Univ. Ithaca, New York 14853	Epidemiology of Sexual and Asexual <u>Phytophthora infestans</u> Populations	William E. Fry	\$80,000	09/01/83	08/31/85
Cornell Univ. Ithaca, New York 14853	Isolation and Characterization of Genes for Pathogenicity in <u>Erwinia amylovora</u>	Steven V. Beer	\$80,000	07/01/83	06/30/85
Boyce Thompson Inst. for Plant Research Cornell Univ., Tower Road Ithaca, New York 14853	An Enzyme Storage Complex for DNA Synthesis in Uredospores of the Bean Rust Fungus	Richard C. Staples	\$31,000	09/01/81	08/31/84

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
The Rockefeller Univ. New York, New York 10021	Viroid Multiplication and Disease Induction	Hugh D. Robertson	\$40,000	08/01/83	07/31/85
North Carolina State Univ. Raleigh, North Carolina 27650	Allelopathic Substances in Ecosystems: The Role of the Soil Environment	Udo Blum	\$60,000	08/01/81	07/31/85
North Carolina State Univ. Raleigh, North Carolina 27650	Spread of Aphid-Borne Plant Viruses as Affected by Aphid and Virus Resistance	J. W. Moyer	\$80,000	09/01/81	08/31/85
North Carolina State Univ. Raleigh, North Carolina 27650	Soybean Cyst Nematode- <u>Rhizobium</u> Interactions: Pathogenesis and Resistance	J. S. Huang	\$70,000	07/01/81	06/30/85
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Cloning of Virulence Genes from <u>Erwinia stewartii</u>	David L. Coplin	\$102,300	08/01/83	07/31/85
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Control of Insect Populations by Regulation of Dormancy	David L. Denlinger	\$77,446	09/01/83	08/31/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
Oberlin College Oberlin, Ohio 44074	Biological Determinants of Nectar Production: A Model System	Michael Zimmerman	\$15,000	09/01/83 08/31/85
Ohio Agric. Res. & Development Center Wooster, Ohio 44691	Evolution of Leafhoppers and Stunting Pathogens with Maize and its Ancestors	Lowell R. Nault	\$37,000	07/01/81 06/30/84
Oklahoma State Univ. Stillwater, Oklahoma 74078	Drought and Greenbug Stress Interactions in Winter Wheat Genotypes	Richard C. Johnson	\$75,000	06/01/83 05/31/85
Oregon State Univ. Corvallis, Oregon 97331	Competition and Weed Community Dynamics Based on Germination and Growth Analysis	Steven Radosevich	\$60,000	09/15/83 09/30/86
Texas A&M Research Foundation College Station, Texas 77843	Allomones Involved in the Parasite-Host-Plant Interaction: A Model System	S. Bradleigh Vinson	\$47,000	08/01/81 07/31/84
Texas A&M Research Foundation College Station, Texas 77843	Mechanism of Stress Ethylene Induction in Cotton by the Fleahopper	Page W. Morgan	\$48,000	09/01/81 08/31/84

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Utah State Univ. Logan, Utah 84322	The Role of Mycorrhizae in Competition Between Weeds and Rangeland Grasses	Edith B. Allen	\$70,000	06/01/83	05/31/85
Virginia Polytechnic Inst. & State Univ. Blacksburg, Virginia 24061	Isolation of the Gene for Pectate Lyase Production from <u>Erwinia carotovora</u>	George H. Lacy	\$60,000	07/01/83	06/30/85
Issaquah Health Research Institute 1595 N.W. Gilman Blvd. Issaquah, Washington 98027	Host-Parasite Interactions in the Tobacco Hornworm and the Cabbage Looper	Nancy E. Beckage	\$50,000	07/01/83	06/30/85
Washington State Univ. Pullman, Washington 99164	Wound-Regulated Synthesis and Accumulation of Proteinase Inhibitors in Plants	Clarence A. Ryan	\$52,000	07/01/81	06/30/84
Washington State Univ. Pullman, Washington 99164-1030	Relationship of Iron Assimilation to the Virulence of <u>Pseudomonas syringae</u>	Dennis C. Gross	\$60,000	07/01/83	06/30/85

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Wisconsin Madison, Wisconsin 53706	Studies of the Mechanism Underlying Systemic Virus Invasion of Plants	Gustaaf de Zoeten	\$75,000	09/01/83	08/31/85
Univ. of Wisconsin Madison, Wisconsin 53706	Resistance of Potato Tubers to Tissue Maceration by Pectolytic Enzymes	Arthur Kelman	\$80,000	08/01/83	07/31/85
Univ. of Wisconsin Madison, Wisconsin 53706	A Model of Bacterial Disease Hazard Based on Epiphytic Pathogen Population Size	D. I. Rouse	\$80,000	07/15/81	07/31/85
Univ. of Wisconsin Madison, Wisconsin 53706	Foliar Biological and Integrated Control of the Apple Scab Disease	John H. Andrews	\$60,000	03/01/81	04/30/85
TOTAL			\$4,082,046		

The emphasis in this program area is on determining human nutrient requirements. Support is not provided for clinical research or for demonstration or action projects.

Research in human nutrition contributes to improving human nutritional status by increasing our understanding of requirements for nutrients in relation to different patterns of food intake. Findings help fill the gaps of our knowledge related to nutrient requirements, bioavailability, the inter-relationships of nutrients, and the nutritional value of foods consumed in the United States as they relate to these requirements. Special attention in this program area is given to the study of trace constituents of foods and their effect on human health.

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of California Berkeley, California 94720	The Influence of the Physical Form of the Dietary Fiber on Its Effects in the Gut	Sharon E. Fleming	\$148,000	09/15/83	09/30/85
Univ. of California Los Angeles, California 90024	Diet and Bone Mineral Density in Women Aged 50-79 Years	Isabelle F. Hunt	\$75,000	09/01/83	08/31/84
George Washington Univ. Washington, D.C. 20052	Dietary Fibers and Nutrient Absorption: Structure-Function Correlations	George V. Vahouny	\$100,000	08/01/82	07/31/84
Univ. of Florida Gainesville, Florida 32611	Determination of Vitamin B-6 and Folacin Bioavailability Using Stable-Isotope Enrichment Methods	Jesse F. Gregory	\$135,000	08/15/83	08/14/85
Univ. of Illinois Urbana, Illinois 61820	Biochemical and Biophysical Influence of Dietary Fatty Acids on Immunocompetent Cells	Patricia Johnston	\$135,120	09/01/83	08/31/86

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Fort Wayne State Hospital & Training Ctr. 4900 St. Joe Rd. Ft. Wayne, Indiana 46815	Quantitative Assessment of Vitamin B ₆ Metabolism in Man with Stable Isotopes	Stephen P. Coburn	\$68,000	09/15/81	09/30/85
Purdue Research Foundation West Lafayette, Indiana 47907	Mechanisms of Alteration of Bile Acid Excretion by Dietary Fiber	Jon A. Story	\$70,000	09/01/83	08/31/84
Purdue Research Foundation West Lafayette, Indiana 47907	Assessment of Vitamin B-6 Nutriture of Breastfed Infants	Avanelle Kirksey	\$120,000	09/15/83	09/30/85
Louisiana State Univ. & A&M College Baton Rouge, Louisiana 70803	Effects of Trans Fatty Acids on Arachidonic Acid Metabolism	Daniel H. Hwang	\$72,000	08/01/83	07/31/86
Univ. of Maryland College Park, Maryland 20742	An Index of Zinc Absorption in Lactating Women	Phylis B. Moser	\$40,000	09/15/83	09/30/84
Univ. of Maryland College Park, Maryland 20742	Age-related Bone Fragility: Influence of Dietary Zinc on Bone Mobilization	J. H. Soares	\$90,000	08/01/83	07/31/86

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
Univ. of Maryland College Park, Maryland 20742	Zinc, Selenium and Chromium Nutrition in Term and Pre-term Infants	Glen E. Gordon	\$55,000	09/15/80 09/30/84
Massachusetts Institute of Technology Cambridge, Massachusetts 02139	Biochemical Reasons for the Requirement of Vitamin A in the Mammalian Organism	George Wolf	\$80,000	09/01/81 08/31/84
Massachusetts Institute of Technology Cambridge, Massachusetts 02139	A Novel Approach for the Study of Human Amino Acid Metabolism in Relation to Dietary Requirements	Vernon R. Young	\$120,000	09/15/81 09/30/84
Univ. of Minnesota St. Paul, Minnesota 55104	Significance of Trypsin Inhibitors in Human Nutrition	Irvin E. Liener	\$140,000	07/15/83 07/31/85
Univ. of Missouri Columbia, Missouri 65211	Nutritional Essentiality of Lithium	Edward E. Pickett	\$50,000	09/01/83 08/31/84
St. Louis Univ. St. Louis, Missouri 63103	Interrelationship of Iron and Vitamin E	Coy D. Fitch	\$60,000	09/15/82 09/30/84

COMPETITIVE RESEARCH GRANTS
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Cornell Univ. Ithaca, New York 14853	Antithrombotic Action of n3 Polyunsaturated Acids: Optimum Intake and Effects on Prostaglandins	John E. Kinsella	\$75,000	07/15/82	09/30/84
Oklahoma Medical Research Foundation Oklahoma City, Oklahoma 73104	Dietary Requirements for Linoleic Acid and Antioxidant	Mary P. Carpenter	\$70,000	08/01/81	07/31/84
School of Agriculture Oregon State Univ. Corvallis, Oregon 97331	Dietary Selenium Requirements for Pregnant Women	Philip D. Whanger	\$13,000	09/15/80	09/29/84
Pennsylvania State Univ. Univ. Park, Pennsylvania 16802	Compartmental Analysis of Status, Requirements, and Metabolism of Vitamin A	Michael H. Green	\$140,000	09/01/81	08/31/85
Univ. of Vermont & State Agric. College Burlington, Vermont 05405	Diet-induced Alterations in Thyroid Hormone Metabolism and Nutritional Requirements	Elliot Danforth	\$80,000	08/01/83	07/31/84

TOTAL \$1,936,120

SPECIAL RESEARCH GRANTS PROGRAM

The objective of this grant program is to carry out research to facilitate or expand promising breakthroughs in areas of food and agricultural sciences of importance to the Nation. Four major areas of research were funded under this program during Fiscal Year 1983:

Soybean research	\$ 501,455
Antidesertification research	1,003,878
Animal health research	6,927,437
Aquaculture research	<u>501,455</u>
TOTAL	\$ 8,934,225

This program is administered under the authority of Section 2(c)(1) of P.L. 89-106, as amended. Eligible institutions include land-grant colleges and universities, research foundations established by land-grant colleges and universities, State agricultural experiment stations, and all colleges and universities having demonstrable capacity in food and agricultural research.

A brief description of each of the four areas of research in the Special Research Grants Program follows with a listing of research grants made in each for FY 1983.

Soybean Research

The objective of this research is to increase soybean production and conserve natural resources. Two areas of research are funded under this topic: (1) Soybean production research to sustain or increase yields, enhance production efficiency, and conserve natural resources; and (2) research on soybean genetic mechanisms contributing to tolerance to biotic and abiotic stress.

Soybean acreage in the U.S. is exceeded only by corn. Farmers receive more dollars from soybean sales than any other crop, and the export of soybeans contributes more to the U.S. balance of trade than any other agricultural commodity. Edible soybean oil provides the raw material for a diversity of food and industrial uses. The high protein meal provides an indispensable feed for animals: two-thirds of all high-protein feed for livestock and poultry is soybean meal. This program of research grants is aimed at identifying factors limiting further production increases from this versatile crop. Once limiting factors are identified, techniques can be developed to alleviate the problem. Past increases in productivity have been significant--with an average per-acre per-year increase of 0.4 bushels over the past 30 years. The desire is to continue to increase the productivity of soybeans.

SPECIAL RESEARCH GRANTS
PROGRAM AREA: SOYBEAN RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Georgia Research Foundation Athens, Georgia 30602	Susceptibility and Tolerance of Soybean Genotypes to Chilling Temperatures	D. A. Ashley	\$100,000	09/15/83	09/30/87
Louisiana State Univ. & A&M College Baton Rouge, Louisiana 70803	Control of Pest Lepidoptera by Insecticide-Soybean Genotype Combinations	C. M. Smith	\$89,700	09/15/83	09/30/86
Univ. of Minnesota St. Paul, Minnesota 55104	Characterization of <u>Rhizobium japonicum</u> Serogroup 123	Edwin L. Schmidt	\$90,272	08/01/83	07/31/86
Univ. of Minnesota St. Paul, Minnesota 55104	Mechanisms of Environmental Effects on Reproductive Abscission in Soybeans	William A. Brun	\$99,013	07/15/83	07/31/85
Univ. of Missouri Columbia, Missouri 65211	Soybean Production and Soil Organic Matter Balance	George H. Wagner	\$22,556	09/01/83	08/31/84
Univ. of Wisconsin Madison, Wisconsin 53706	Partitioning and Remobilization of Nitrogen and Carbon in Soybeans	Lawrence Schrader	\$99,914	07/15/83	07/31/85

\$ 501,455

The objectives of antidesertification research are to find more rapid, precise and economical methods of monitoring vegetation to detect trends in vegetation changes, and to find better and more economical methods of improving production from and conserving resources on land undergoing desertification.

One-third of the total land area of the world is arid, yet it is the homeland of 14 percent of the world's population. Inhabitants of these arid regions have modified the environment in various ways. Sometimes, the environmental modifications of these fragile lands, often in conjunction with drought, have resulted in a sustained decline and destruction of the biological productivity--a process termed desertification. Desertification has two components: a physical component related to recurring droughts which are a part of arid climates, and a social component related to population pressures and demands made on the land.

More economical and precise methods are needed for monitoring vegetation on these vast arid and semiarid landscapes. Better techniques are needed to more rapidly detect changes in the primary production (changes both in the total amount and in the relative proportion among species) so that remedial action can be taken at the first signs of stress. Also, more information

is needed on the behavior of arid plant ecosystems to better identify stress symptoms and more accurately predict the consequences of management alternatives.

Cost-effective methods of restoring the productivity of lands undergoing desertification are needed. This involves the spectrum of activities from the rehabilitation of disturbed land to manipulation of the plant cover by management practices to enhance production and conserve resources.

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANTIDESERTIFICATION RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Arizona Tucson, Arizona 85721	Factors Influencing Seed Germination Rates of Range Grasses in Arid Environment	Gilbert L. Jordan	\$75,062	08/01/83	07/31/87
Univ. of California Davis, California 95616	Saline Groundwater Irrigation to Reverse Desertification	Frank E. Robinson	\$71,893	09/15/83	09/30/86
Colorado State Univ. Ft. Collins, Colorado 80523	Forage: A Volumetric Measure of Desertification Trend in the Four Corners Region	Charles D. Bonham	\$79,900	08/01/83	04/30/85
Agric. Expt. Station Univ. of Nebraska Lincoln, Nebraska 68583-0704	Revegetation for Increased Productivity of Abandoned Irrigated and Dry Farm Land	J. Stubbendieck	\$63,046	07/15/83	07/31/86
Agric. Expt. Station Univ. of Nevada Reno, Nevada 89557	Spectral Evaluations of Arid Land Vegetation	Paul T. Tueller	\$79,842	09/15/83	03/31/86

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANTIDESERTIFICATION RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
New Mexico State Univ. Las Cruces, New Mexico 88003	Role of Plant Growth and Utilization in the Desertification Process	Gary B. Donart	\$74,200	07/15/83 07/31/87
Agric. Expt. Station North Dakota State Univ. Fargo, North Dakota 58105	Water Table Alteration and Changes in Salinization or Evaporite Mineralogy	J. L. Richardson	\$67,894	09/01/83 08/31/84
Oregon State Univ. Corvallis, Oregon 97331	Reclaiming Desertified Sagebrush Sites with Grasses and Shrubs	Marshall Haferkamp	\$74,944	07/15/83 01/31/87
Texas A&M Research Foundation College Station, Texas 77843	Short Duration Grazing as a Tool in Reversing Desertification	Wilbert Blackburn	\$77,086	08/01/83 09/30/85
Texas Tech Univ. Lubbock, Texas 79409	A Determination and Comparison of Desertification Processes on Cropped and Grazed Semiarid Lands	Russell D. Pettit	\$180,498	08/01/83 07/31/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANTIDESERTIFICATION RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
Utah State Univ. Logan, Utah 84322	The Role of Mycorrhizae in Reversing Desertification	Edith B. Allen	\$79,899	09/15/83 09/30/85
Univ. of Wyoming Laramie, Wyoming 82071	Reversing Desertification of Riparian Zones Using Instream Flow Structures and Beaver	Quentin D. Skinner	\$79,614	09/15/83 03/31/88
				\$1,003,873

Overall, this research is to develop and/or refine abiotic and biotic methods to suppress animal losses from infectious and noninfectious diseases and internal and external parasites. The research is directed toward clarifying infectious and noninfectious diseases and parasites and their interactive effects on animal health; and to develop practical and implementable management systems for the producer to prevent or alleviate these causes of animal losses.

Research includes clarification of complex or unknown etiologies, development or improvement of diagnostic methodology, clarification of disease pathogenesis and methods of transmission, studies of resistance mechanisms and resistance enhancing factors and development of disease prevention, control or eradication technology.

Research is centered on highest priority animal health problems of beef and dairy cattle, swine, poultry, sheep, horses and aquaculture species as identified by the Animal Health Science Research Advisory Board. This includes studies on major causes of disease losses in beef and dairy cattle production such as the respiratory disease complex, reproductive diseases including brucellosis and anestrus, enteric and digestive diseases, mastitis, blue-tongue, parasites and metabolic diseases. Research on swine centers on health hazards such as enteric, reproductive and respiratory diseases, and other major problems such as pseudorabies and trichinosis. Poultry disease studies include respiratory diseases, skeletal problems, enteric, neoplastic and immunologic disorders and leukosis.

Sheep research includes diseases such as foot rot, respiratory disease, parasites and blue tongue. Equine health research centers on respiratory, enteric and reproductive diseases and musculoskeletal disorders. Research on diseases in aquaculture species also is included.

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Auburn Univ. Auburn Univ., Alabama 36849	Infectious Bovine Rhinotracheitis Virus, Latency, and Respiratory Disease	Charles R. Rossi	\$148,653	07/01/83	06/30/86
Auburn Univ. Auburn Univ., Alabama 36849	Development of a Leukotoxin Toxoid for Bovine <u>Fusobacterium</u> <u>necrophorum</u> Infections	Charles M. Scanlan	\$50,000	07/15/83	07/31/85
Univ. of Arkansas Fayetteville, Arkansas 72701	Antiviral Substance in Chicken Sera	Craig Whitfill	\$65,472	09/15/83	09/30/86
Univ. of California Davis, California 95616	Ram Epididymitis: Factors in Pathogenesis by Non-Brucella Bacterial Agents	Ernst L. Biberstein	\$54,842	08/15/83	08/31/85
Univ. of California Davis, California 95616	Toxic Mechanisms of Respiratory Infection by <u>Pasteurella haemolytica</u> in Cattle	Michael L. Bruss	\$100,000	08/01/83	07/31/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of California Davis, California 95616	Subunit Diagnostic Reagents of Bluetongue Virus	Bennie I. Osburn	\$100,000	08/01/83	05/31/85
Univ. of California Davis, California 95616	Development of a Highly Sensitive Virus Detection Test for Bluetongue Virus in Bulls	Jeffrey L. Stott	\$132,414	08/15/83	08/31/85
Univ. of California Davis, California 95616	Monoclonal Antibodies for Rapid Detection of Avian Mycoplasmas in Tissues and Body Fluids	Richard Yamamoto	\$58,778	07/01/83	06/30/85
Univ. of California Davis, California 95616	Endotoxin in the Patho- genesis and Prophylaxis of <u>Haemophilus</u> <u>pleuropneumoniae</u> in Swine	Harvey J. Olander	\$118,496	08/15/83	08/31/85
Colorado State Univ. Ft. Collins, Colorado 80523	Antibiotic-Induced Malabsorption in Calves - The Role of Bacteria and Viruses	Robert W. Phillips	\$39,822	07/01/83	06/30/84

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Colorado State Univ. Ft. Collins, Colorado 80523	Nucleic Acid Hybridization Probes: Diagnosis of Bovine Viral Reproductive Disease	B. J. Beaty	\$132,690	09/01/83	08/31/85
Univ. of Connecticut Storrs, Connecticut 06268	Reovirus Vaccination in the Control of Mal- absorption Syndrome in Poultry	Louis van der Heide	\$100,000	09/15/83	09/30/86
Univ. of Florida Gainesville, Florida 32611	Piglet Jejunal EMG Response to <u>E. coli</u> Enterotoxin	Alfred M. Merritt	\$21,367	09/01/83	08/31/84
Univ. of Florida Gainesville, Florida 32611	Body Fluid and Tissue Concentrations of Antimicrobic Drugs in Horses	Murray P. Brown	\$23,390	07/01/83	06/30/84
Univ. of Georgia Research Foundation Athens, Georgia 30602	Attachment and Invasion of Fish Cells by Aeromonas and Flexibacter	Emmett B. Shotts	\$78,975	07/01/83	06/30/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
Univ. of Georgia Research Foundation Athens, Georgia 30602	Studies on <u>Mycoplasma gallisepticum</u> Vaccines and Bacterins	S. H. Kleven	\$57,812	08/15/83 08/31/86
Univ. of Georgia Research Foundation Athens, Georgia 30602	Antigenic Variation and Immunogenicity of Infectious Bursal Disease Viral Proteins	Phil D. Lukert	\$87,354	07/01/83 06/30/86
Univ. of Illinois Urbana, Illinois 61801	The Effect of Milk Fat, Casein and Endothelial Selection on Bovine Neutrophils	John A. Shadduck	\$40,000	09/01/83 08/31/85
Univ. of Illinois Urbana, Illinois 61801	MMA In the Sow. What Regulates Prolactin Secretion?	William C. Wagner	\$67,631	08/15/83 08/31/85
Purdue Research Foundation West Lafayette, Indiana 47907	Endotoxin-Induced Effects on Vascular Endothelial Cells	G. D. Bottoms	\$110,668	09/01/83 08/31/86
Iowa State Univ. of Science & Technology Ames, Iowa 50011	Preparturient Immunization of Sows in the Prevention of Neonatal Pig Coccidiosis	Julie Ann Jarvinen	\$50,000	09/15/83 09/30/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Iowa State Univ. of Science & Technology Ames, Iowa 50011	Reducing Pig Losses Due to MMA by Promoting Prolactin Secretion with an Antidopaminergic Drug	Walter H. Hsu	\$86,452	07/15/83	07/31/86
Iowa State Univ. of Science & Tech. Ames, Iowa 50011	Evaluation and Refinement of 2 Antigen Delivery Systems for Pseudorabies Subunit Vaccines	Kenneth B. Platt	\$78,778	08/15/83	08/31/86
Univ. of Iowa Iowa City, Iowa 52242	Characterization and Microquantitation of Bovine Immunoglobulins (Igs) and Specific Antibodies	John E. Butler	\$149,770	09/01/83	08/31/86
Kansas State Univ. Manhattan, Kansas 66506	An Enzyme Immunoassay for Endotoxins in Body Fluids of Cattle	Embert H. Coles	\$80,000	09/15/83	09/30/85
Kentucky Agric. Expt. Station Univ. of Kentucky Lexington, Kentucky 40546	Relationship of an Endophytic Fungus in Tall Fescue and Summer Toxicosis in Cattle	Roger W. Hemken	\$100,000	08/15/83	08/31/86

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Kentucky Agric. Expt. Station Univ. of Kentucky Lexington, Kentucky 40546	Antigenic Characterization of Equine Herpesvirus 1 with Monoclonal Antibodies	George P. Allen	\$80,000	09/01/83	08/31/88
Louisiana State Univ. & A&M College Baton Rouge, Louisiana 70803	Cytological Evaluation and Immunostimulation of Bovine Teat End Tissue	Stephen Nickerson	\$71,000	09/15/83	09/30/86
Louisiana State Univ. & A&M College Baton Rouge, Louisiana 70803	Viral Effects on Bovine Lung Resistance to <u>Pasteurella Haemolytica</u> <u>in vivo</u>	R. E. Corstvet	\$149,851	07/01/83	06/30/86
Univ. of Maryland College Park, Maryland 20742	Characterization of Newcastle Disease Virus Pathotypes with Monoclonal Antibodies	David B. Snyder	\$83,604	09/01/83	08/31/85
Univ. of Massachusetts Amherst, Massachusetts 01003	Competitive Exclusion of Salmonellae in Chickens	Glenn H. Snoeyenbos	\$69,654	07/15/83	07/31/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Massachusetts Amherst, Massachusetts 01003	Resistance to Bovine Mastitis Following Accelerated Mammary Involution	Stephen P. Oliver	\$75,000	09/15/83	09/30/85
Michigan State Univ. East Lansing, Michigan 48824	Economic Impact and Cost Benefit Analysis of Bovine Mastitis	Paul C. Bartlett	\$43,733	09/15/83	09/30/86
Michigan State Univ. East Lansing, Michigan 48824	Role of Endotoxin and Neutrophils in Bovine Pneumonic Pasteurellosis	N. E. Robinson	\$100,000	09/15/83	09/30/85
Michigan State Univ. East Lansing, Michigan 48824	Immunochemical Methods for the Diagnosis and Prevention of Swine Mycotoxicoses	James J. Pestka	\$78,779	09/15/83	09/30/85
Michigan State Univ. East Lansing, Michigan 48824	Nutritional Consequences of Cryptosporidiosis in Calves	Thomas H. Herdt	\$37,842	09/01/83	08/31/84
Univ. of Minnesota St. Paul, Minnesota 55104	Molecular, Pathogenic, and Immunologic Characteristics of Porcine Parvovirus	Han Soo Joo	\$126,684	09/01/83	08/31/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Minnesota St. Paul, Minnesota 55104	Adherence of <u>Pasteurella</u> <u>haemolytica</u> to Nasal Epithelial Cells <u>in vitro</u>	Frederick Markham	\$50,000	09/15/83	09/30/84
Univ. of Missouri Columbia, Missouri 65211	Pseudorabies Virus Latency: Investigation by DNA Hybridization, Finger- printing, and Tissue Cultivation	David G. Thawley	\$129,720	08/15/83	08/31/86
St. Louis Univ. School of Medicine St. Louis, Missouri 63104	Mode of Action and Pharmacologic Blockade of <u>E. coli</u> Heat-Stable Enterotoxins	Richard Greenberg	\$50,000	09/01/83	08/31/85
Cornell Univ. Ithaca, New York 14853	Identification of Pheromones and Other Compounds in Dairy Cows at Estrus	Walter R. Butler	\$149,788	09/01/83	08/31/85
Cornell Univ. Ithaca, New York 14853	Coliform Mastitis: Immunologic Control Utilizing the J5 Mutant of <u>Escherichia coli</u> 0111B ₄	M. E. White	\$65,000	09/01/83	08/31/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Cornell Univ. Ithaca, New York 14853	Development of an Effective Nonviable Vaccine for Bovine Brucellosis	Alexander J. Winter	\$123,889	09/01/83	08/31/85
North Carolina Agric. Research Service North Carolina State Univ. Raleigh, North Carolina 27650	Endocrine and Nonendocrine Determinants of Expression and Detection of Estrus	Jack H. Britt	\$63,984	09/01/83	08/31/86
North Carolina Agric. Res. Service North Carolina State Univ. Raleigh, North Carolina 27650	Porcine Ovarian Inhibin and Its Relationship to Swine Anestrus	William L. Miller	\$36,510	08/15/83	08/31/86
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Hypobiotic Changes in <u>Ostertagia ostertagi</u> During Environmental Adaptation	Rupert P. Herd	\$109,552	09/01/83	08/31/85
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Bovine Rotavirus: Molecular Epizootiology and the Quest for Serotypes	Kenneth W. Theil	\$89,784	08/15/83	08/31/86

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Epizootiology and Pathogenesis of an Alcaligenes Faecalis Variant in Turkeys and the Role of Pili in Development of Alcaligenes Rhinotracheitis	Y. M. Saif	\$50,547	08/15/83	08/31/85
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Environmental Mastitis Control and Dietary Selenium and Vitamin E	K. Larry Smith	\$44,323	08/15/83	02/28/85
Ohio State Univ. Columbus, Ohio 43212	Characterization and Propagation of New Enteric Viral Pathogens of Swine	Linda J. Saif	\$96,602	08/15/83	08/31/86
College of Vet Medicine Oklahoma State Univ. Stillwater, Oklahoma 74078	Developmental Cycle of <u>Anaplasma marginale</u> in <u>Dermacentor andersoni</u>	Katherine M. Kocan	\$70,000	07/01/83	06/30/85
College of Vet Medicine Oklahoma State Univ. Stillwater, Oklahoma 74078	Bovine Immunity: <u>Pasteurella haemolytica</u> Capsular Antigens and Cytotoxin	Anthony W. Confer	\$149,999	07/01/83	06/30/86

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Agric. Expt. Station Oklahoma State Univ. Stillwater, Oklahoma 74078	Nutrition and Anestrus in Beef Cows	Robert P. Wettemann	\$133,708	09/01/83	08/31/86
Agric. Expt. Station Oklahoma State Univ. Stillwater, Oklahoma 74078	Impact of Face Flies on Pinkeye in Cattle: Transmission of <u>Moraxella bovis</u>	R. E. Wright	\$69,600	09/15/83	09/30/85
Oregon State Univ. Corvallis, Oregon 97331	Improved Immunodiagnosis of Ovine Fascioliasis	Gary L. Zimmerman	\$46,591	07/15/83	07/31/84
Oregon State Univ. Corvallis, Oregon 97331	The Role of <u>Bacteroides</u> <u>nodosus</u> Pili in the Early Pathogenesis of Ovine Foot Rot	John A. Schmitz	\$120,000	08/15/83	08/31/85
Univ. of Pennsylvania Philadelphia, Pennsylvania 19104	Trichinosis: Relative Importance of Swine and Rats in Planning Its Eradication	Gerhard A. Schad	\$30,000	09/15/83	09/30/84

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Pennsylvania Philadelphia, Pennsylvania 19104	Infectious Bovine Rhinotracheitis Virus: New Approaches to the Analysis of Latent Infections	William C. Lawrence	\$131,924	09/01/83	08/31/86
Pennsylvania State Univ. Univ. Park, Pennsylvania 16802	Factors Affecting Teat Skin Microflora	Robert J. Eberhart	\$53,607	09/01/83	08/31/84
Pennsylvania State Univ. Univ. Park, Pennsylvania 16802	Early Events Related to Vascularization of Tibial Dyschondroplastic Cartilage	Roland M. Leach	\$146,159	09/01/83	08/31/85
Texas A&M Research Foundation College Station, Texas 77843	Neuroendocrine Control of Luteinizing Hormone Releasing Hormone (LHRH) During Anestrus in the Cow	Paul G. Harms	\$148,650	09/01/83	08/31/85
Texas A&M Research Foundation College Station, Texas 77843	Molecular Genetics of Interferons and Resistance to Bovine Respiratory Disease	James E. Womack	\$52,731	09/01/83	08/31/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Texas A&M Research Foundation College Station, Texas 77843	Strain-Specific <u>Brucella abortus</u> Antigenic Analysis via 2-D Gel Electrophoresis	Blair A. Sowa	\$83,930	09/01/83	08/31/85
Texas A&M Research Foundation College Station, Texas 77843	Porcine Bordetellosis: Acquired Immunity to Putative Protective Antigens	Paul H. De Foor	\$149,553	09/01/83	08/31/86
Virginia Polytech Inst. & State Univ. Blacksburg, Virginia 24061	Factors Affecting the Pathogenicity of <u>Bordetella bronchiseptica</u> in the Neonatal Pig	Hugo P. Veit	\$49,920	09/01/83	08/31/85
Washington State Univ. Pullman, Washington 99164	<u>Haemophilus somnus</u> Infections of Cattle	Lynette B. Corbeil	\$75,537	09/01/83	08/31/86
Washington State Univ. Pullman, Washington 99164	Colibacillosis: Neonatal Septicemia and Endotoxemia in Calves	Clive C. Gay	\$100,000	09/01/83	08/31/86

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Washington State Univ. Pullman, Washington 99164	Application of Monoclonal Antibody Technology to Measure Resistance to Mastitis	William C. Davis	\$50,000	09/15/83	09/30/85
Washington State Univ. Pullman, Washington 99164	Application of Monoclonal Antibody Technology to Study Immunity to Enterotoxigenic <u>E. coli</u>	K. W. Kelley	\$100,000	09/15/83	09/30/86
Washington State Univ. Pullman, Washington 99164	Development of an Effective Subunit Vaccine for Bovine Anaplasmosis	T. C. McGuire	\$149,274	07/01/83	06/30/86
Washington State Univ. Pullman, Washington 99164-1030	A Subunit Vaccine and Rapid Diagnostic Kit for Vesicular Stomatitis	T. Yilmaz	\$149,985	09/01/83	08/31/85
Washington State Univ. Pullman, Washington 99164-1030	Endocrine Control of Lactational Anestrus in Beef Cows	Jerry J. Reeves	\$149,986	09/15/83	09/30/86
West Virginia Univ. Morgantown, West Virginia 26506	Roles of FSH and Uterine Luteolysins in Luteal Function in Anestrous Cows	E. Keith Inskeep	\$127,900	08/15/83	08/31/87

SPECIAL RESEARCH GRANTS
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Wisconsin Madison, Wisconsin 53706	Liposome-Antibiotic- Enhanced Bactericidal Activity of Phagocytic Cells	Ronald D. Schultz	\$66,982	08/15/83	08/31/84
Univ. of Wisconsin Madison, Wisconsin 53706	Newcastle Disease: The Effect of Mutations and Subpopulations on Transmissibility	Robert P. Hanson	\$138,237	07/01/83	06/30/85
Univ. of Wisconsin Madison, Wisconsin 53706	Isolation of Protective and Immunogenic Antigens of <u>Pasteurella haemolytica</u>	Michael T. Collins	\$95,554	09/15/83	09/30/86
Univ. of Wisconsin Madison, Wisconsin 53706	Molecular Analysis of Humoral Protection in Infectious Bovine Rhinotracheitis	Geoffrey Letchworth	\$150,000	07/01/83	06/30/86
				\$ 6,899,037*	

*ONE ANIMAL HEALTH AWARD WAS SPLIT-FUNDED WITH AQUACULTURE.
\$28,400 INCLUDED IN AQUACULTURE FIGURE.

Aquaculture

This research is to provide and/or improve upon the scientific and technical base needed by the aquaculture industry. This industry has been expanding rapidly. Problems of nutrition, breeding, physiology, management, disease and parasite control are important and are becoming more limiting as the size of the industry and its concentration have increased.

Interest is focused on local and regional problems for which solutions will contribute to national objectives related to aquaculture production.

The specific objectives of the research are: (1) improved production efficiency through diet formulation, reproduction and breeding, and disease and parasite control; (2) improved water quality for production and control of factors affecting the quality of water discharge; and (3) increased production of freshwater species having high production potential such as catfish, trout, bait minnows, and crawfish.

SPECIAL RESEARCH GRANTS
PROGRAM AREA: AQUACULTURE RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Auburn Univ. Auburn Univ., Alabama 36849	Energy Requirements of Channel Catfish	Richard T. Lovell	\$29,500	08/15/83	08/31/85
Auburn Univ. Auburn Univ., Alabama 36849	Heritabilities for Feed Consumption and Conversion Efficiency in Channel Catfish	Rex A. Dunham	\$59,550	09/15/83	09/30/85
Univ. of Hawaii Honolulu, Hawaii 96822	Production of Monosex Progeny from Crosses of Surgically Sex-Reversed Prawns	Spencer R. Malecha	\$74,625	08/15/83	08/31/85
Louisiana State Univ. & A&M College Baton Rouge, Louisiana 70803	Effects of Rice Pesticides on Crawfish Production: A Biological and Economic Evaluation	J. W. Avault	\$79,282	09/15/83	09/30/85
Univ. of Montana Missoula, Montana 59812	Genetics of Carbohydrate Metabolism in Rainbow Trout	Fred W. Allendorf	\$43,158	09/15/83	09/30/85

SPECIAL RESEARCH GRANTS
PROGRAM AREA: AQUACULTURE RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Oklahoma Norman, Oklahoma 73019	Staging Paddlefish Ova to Enhance Induced Spawning	William L. Shelton	\$19,856	08/15/83	08/30/84
Oregon State Univ. Corvallis, Oregon 97331	Infectious Hematopoietic Necrosis Virus in Rainbow Trout: Transmission and Virulence	J. R. Winton	\$64,493*	09/15/83	09/30/85
Oregon State Univ. Corvallis, Oregon 97331	Vegetable and Animal Lipids as Substitutes for Fish Oil in Trout Diets	Joseph E. Nixon	\$79,400	09/15/83	09/30/86
Memphis State Univ. Memphis, Tennessee 38152	Activation and Bactericidal Immunity of the Alternative Complement Pathway of Channel Catfish <u>Ictalurus punctatus</u>	Donald D. Ourth	\$79,991	09/15/83	09/30/86
			\$529,855*		

*AWARD SPLIT-FUNDED WITH ANIMAL HEALTH
(COUNTED IN AQUACULTURE FIGURE)

AQUACULTURE AWARD	\$ 36,093
ANIMAL HEALTH AWARD	28,400
	<u>46,493</u>

ALCOHOL FUELS RESEARCH GRANTS PROGRAM

This program is administered under the authority of Section 1419 of Public Law 95-113, as amended, which authorizes grants for research in the areas of alcohols and industrial hydrocarbons from agricultural commodities and forest products and agricultural chemicals and other products and coal derivatives. The total amount available for this program during Fiscal Year 1983 was \$522,752.

The Alcohol program funds are intended to stimulate and support energy-related research. This includes research on the evaluation (including economic), treatment, and conversion of biomass for manufacture of alcohol. Such research is national in scope, is not designed to meet the needs or address the problems of a particular State, area or locality, does not include demonstration or pilot research projects, and does not involve capital construction. Eligible institutions include colleges, universities, Government corporations and Federal laboratories. A list of the research grants awarded in Fiscal Year 1983 follows.

ALCOHOL FUELS RESEARCH GRANTS
PROGRAM AREA: ALCOHOL RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Calif.-San Diego La Jolla, California 92093	Fluidized Microcarrier Immobilized Yeast Cell Fermentor	Poa C. Chau	\$48,048	09/15/83	09/30/85
Univ. of Illinois Urbana, Illinois 61801	Genetic Amplification of <u>α-Amylase in Clostridium acetobutylicum</u>	Hans P. Blaschek	\$74,848	09/01/83	08/31/85
Purdue Univ. West Lafayette, Indiana 47907	Immobilized Living Yeast Cells in Ethanol Production	George T. Tsao	\$79,923	09/01/83	08/31/85
Purdue Univ. West Lafayette, Indiana 47907	Role of Water in Cellulose Transformations	Michael R. Ladisch	\$80,000	09/01/83	08/31/85
Purdue Univ. West Lafayette, Indiana 47907	Improvement of Yeast Alcohol Fermentation via Genetic Engineering	Nancy W.Y. Ho	\$79,939	09/15/81	09/30/85
Oregon State Univ. Corvallis, Oregon 97331	Cell Membrane Technology in the Fermentative Production of Alcohol	Leo W. Parks	\$80,000	07/01/83	06/30/85

ALCOHOL FUELS RESEARCH GRANTS
PROGRAM AREA: ALCOHOL RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1983

ORGANIZATION	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD
				FROM TO
Virginia Polytechnic Inst. & State Univ. Blacksburg, Virginia 24061	Cellular Regulation of Butanol-Isopropanol Fermentation	Jiann-Shin Chen	\$79,994	07/01/83 06/30/85
			\$ 522,752	

SCIENTISTS WHO SERVED ON S&E PEER PANELS FOR FY 1983

Scientists from government, universities, and industry served on the S&E peer panels this past year. Each panel was put together to fit the expertises needed for that specific granting area. The scientists involved are listed below by State and by institution or organization.

ALABAMA

P. C. Badger
Tennessee Valley Authority-Florence

R. T. Lovell
Auburn University

Paul C. Smith
Auburn University

Bryan Truelove
Auburn University

ARIZONA

Gordon R. Dutt
University of Arizona

ARKANSAS

B. R. Griffin
P.O. Box 632-Prescott

CALIFORNIA

Sharon R. Long
Stanford University

William C. Taylor
University of California-Berkeley

CALIFORNIA--continued

Sean S. Duffey
University of California-Davis

Bennie I. Osburn
University of California-Davis

Donald A. Phillips
University of California-Davis

Barbara O. Schneeman
University of California-Davis

Robert J. Shepherd
University of California-Davis

William Timberlake
University of California-Davis

Jo Anne Brasel
UCLA Medical Center-Torrance

Marian E. Swendseid
University of California-Los Angeles

C. A. West
University of California-Los Angeles

Dennis D. Focht
University of California-Riverside

CALIFORNIA--continued

Werner P. Heuschele
Zoological Society-San Diego

COLORADO

Darryl E. Smika
ARS-USDA
Central Great Plains Research Sta.

E. Thomas Bartlett
Colorado State University

Michael H. Glantz
National Center for Atmospheric
Research-Boulder

DELAWARE

Robert T. Giaquinta
E. I. duPont deNemours & Company-
Wilmington

J. K. Rosenberger
University of Delaware

DISTRICT OF COLUMBIA

Donald J. Bray
CSRS-USDA

DISTRICT OF COLUMBIA--continued

W. K. Murphrey
CSRS-USDA

P. E. Schleusener
CSRS-USDA

Earl J. Splitter
CSRS-USDA

Howard S. Teague
CSRS-USDA

FLORIDA

William H. Outlaw, Jr.
Florida State University

J. T. Neilson
University of Florida

Lewis A. Barness
University of Southern Florida

GEORGIA

James W. Todd
Georgia Coastal Plains Expt.
Station-Tifton

ILLINOIS

W. M. Doane
ARS-USDA
Northern Regional Research Center

R. W. Detroy
ARS-USDA
Northern Regional Research Center

ILLINOIS--continued

Michael Sung
Southern Illinois University

C. E. Goering
University of Illinois

Donald R. Ort
ARS-USDA
University of Illinois

W. R. Gomez
University of Illinois

D. R. Hunt
University of Illinois

Michael Irwin
University of Illinois

Patricia V. Johnson
University of Illinois

Miodrag Ristic
University of Illinois

Colin A. Wraight
University of Illinois

INDIANA

William A. Cramer
Purdue University

M. R. Ladisch
Purdue University

M. Y. Ash
Yeager & Sullivan-Camden

IOWA

Edward L. Jeska
Iowa State University

IOWA--continued

Reid G. Palmer
Iowa State University

William P. Switzer
Iowa State University

Glynn Frank
ARS-USDA
National Animal Disease Center

Martin J. Van Der Maaten
ARS-USDA
National Animal Disease Center

Harley W. Moon
ARS-USDA
National Animal Disease Center

KANSAS

Embert H. Coles
Kansas State University

William T. Schapaugh, Jr.
Kansas State University

Stephen M. Welch
Kansas State University

KENTUCKY

J. T. Bryans
University of Kentucky

Tom Pirone
University of Kentucky

M. Scott Smith
University of Kentucky

James W. Anderson
Veterans Admin. Hospital-Lexington

LOUISIANA

James W. Avault
Louisiana State University

MAINE

John Tjepkema
University of Maine

MARYLAND

Robert C. Leffel
ARS-USDA-BARC

D. K. Murrell
ARS-USDA-BARC

Max A. Paape
ARS-USDA-BARC

Pedro Barbosa
University of Maryland

William J. Wiebold
University of Maryland

Harold Lupton
U.S. Army Medical Research
Institute-Frederick

MASSACHUSETTS

Shirley W. Thenen
Harvard School of Public Health

William H. Orme-Johnson
Massachusetts Institute of Technology

George Wolf
Massachusetts Institute of Technology

MASSACHUSETTS--continued

Jeffrey P. Erickson
Tufts University

MICHIGAN

James Miller
Michigan State University

Christopher R. Somerville
Michigan State University

A. M. Fadly
ARS-USDA
Regional Poultry Research Lab

J. W. Lauderdale
The Upjohn Company-Kalamazoo

Albert Siegel
Wayne State University

MINNESOTA

William Bushnell
ARS-USDA
Cereal Rust Laboratory

Thomas Guilfoyle
University of Minnesota

LaVell M. Henderson
University of Minnesota

B. S. Pomeroy
1443 Raymond Avenue-St. Paul

MISSOURI

J. R. Fischer
ARS-USDA
University of Missouri

MISSOURI--continued

Dale G. Blevins
University of Missouri

Jere L. Gilles
University of Missouri

Roger G. Hanson
University of Missouri

L. G. Morehouse
University of Missouri

Joseph E. Varner
Washington University-St. Louis

MISSISSIPPI

R. E. Reagan
Mississippi State University

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NEBRASKA

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David W. Galbraith
University of Nebraska

A. Torres-Medina
University of Nebraska

J. J. Ford
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U. S. Meat Animal Research Center

Anne Vidaver
University of Nebraska

NEW JERSEY

B. S. Montenecourt
Lehigh University

Randy Gaugler
Rutgers, The State University
of New Jersey

NEW MEXICO

Reldon F. Beck
New Mexico State University

NEW YORK

Erwin H. Mosbach
Beth Israel Medical Center-
New York

Elizabeth D. Earle
Cornell University

H. F. Schryver
Cornell University

Bud C. Tennant
Cornell University

L. P. Walker
Cornell University

O. C. Yoder
Cornell University

Clive Jones
New York Botanical Garden-
Millbrook

Barbara J. Apgar
ARS-USDA
U.S. Plant, Soil and Nutrition Lab

NORTH CAROLINA

Kenneth R. Barker
North Carolina State University

Eduard V. DeBuysscher
North Carolina State University

Major M. Goodman
North Carolina State University

Steven C. Huber
ARS-USDA
North Carolina State University

NORTH DAKOTA

Leslie M. Klevay
ARS-USDA
Human Nutrition Research Lab

OHIO

L. E. Heider
The Ohio State University

August F. Schmitthenner
Ohio State University

Wolfgang D. Bauer
The Charles F. Kettering
Research Laboratory-Yellow Springs

OREGON

Dallice Mills
Oregon State University

J. E. Lannan
Oregon State University

PENNSYLVANIA

David Mackenzie
Pennsylvania State University

Stanley E. Stevens, Jr.
Pennsylvania State University

SOUTH DAKOTA

James L. Krysan
ARS-USDA
Northern Grain Insects Research
Laboratory

Christian G. Paech
South Dakota State University

TEXAS

Gary L. Adams
Texas A&M University

L. C. Grumbles
Texas A&M University

Gary E. Hart
Texas A&M University

Harland Renshaw
Texas A&M University

Russell D. Pettit
Texas Tech University

UTAH

James R. Ehleringer
University of Utah

Anne Anderson
Utah State University

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